



FIR DSP SPEAKER PROCESSOR

RBA480D

User Manual — Mac & Windows

Contents

1 • Introduction

Features • What's in the box

2 • Technical specifications

3 • Front and rear panels

Panel layout • Front-panel menu • Channel buttons •
Device lock

4 • Connecting to a computer

USB • Network (single port and Dante PRI/SEC) •
RS232

Part A • Mac software — RBALabs DSP Control

A1 Install • A2 Connect • A3 Mixer • A4 Channel
pages (EQ, FIR, dynamics) • A5 Routing • A6
Sources & test signal • A7 Presets • A8 FIR
Designer • A9 Device & control codes • A10
Projects & demo • A11 Troubleshooting

Part B • Windows software — DSPconsole

B1 Install • B2 Connect • B3 Function windows • B4
Mixer & quick buttons • B5 Menus • B6 Presets • B7
FIR Designer

Appendix

FIR basics • Filter types and ranges • Parameter
ranges • Mac vs Windows • Support

Which section do I need?

Chapters 1–4 apply to everyone. Then read **Part A** if you use a Mac, or **Part B** if you use a Windows PC. Both programs control the same unit and you can switch between them at any time — settings live in the DSP, not on the computer.

1 • Introduction

The RBA480D is a 4-input, 8-output FIR DSP speaker processor for live sound, installed systems and studios. It combines high-resolution IIR equalisation and crossovers with per-channel FIR filters for linear-phase correction, Dynamic EQ on the inputs, and compressors and limiters on every output. Inputs accept analog or AES3 signals, and the RBA480D adds Dante network audio with redundant primary and secondary ports.

The unit can be operated from the front panel, from a computer over USB or the network, or from third-party control systems over RS232.

Features

- 4 balanced XLR inputs (A–D; A and C also accept AES3) and 8 balanced XLR outputs.
- Dante network audio with **PRI** and **SEC** (redundant) ports.
- 96 kHz / 24-bit processing on an ADI SHARC DSP; 2.1 ms system latency.
- 15-band parametric EQ per input, 10-band per output, plus high- and low-pass filters (Butterworth, Bessel, Linkwitz-Riley, 6–48 dB/oct).
- 14 EQ filter types including shelves, all-pass, phase, band-pass and notch.
- FIR filter on every input and every output: 256 or 512 taps at 48 kHz.
- Built-in FIR Designer: automatic magnitude and linear-phase correction from a speaker measurement (Smaart, REW or CSV).
- 3-band Dynamic EQ and noise gate on each input; compressor and limiter on each output.
- Delay up to 2000 ms on every channel; 4×4 / 8×4 / 8×8 routing matrix.
- 30 user presets stored in the unit, with a power-on (boot) preset.
- Control over USB, Ethernet (TCP/IP) or RS232; control codes for third-party systems.
- Native control software for **macOS** (Apple Silicon and Intel) and **Windows**.

What's in the box

- RBA480D processor
- IEC power cable
- USB A-to-B cable
- This manual (download the latest version and software from **realbigaudiolabs.com**)

2 · Technical specifications

Processing	ADI SHARC 21489, 450 MHz · 96 kHz / 24-bit AD/DA · system latency 2.1 ms
Analog inputs	4 × balanced XLR (Neutrik) · 20 k Ω · max +20 dBu
Digital inputs	AES3 on inputs A and C (selectable per input)
Analog outputs	8 × balanced XLR (Neutrik), line level · 50 Ω
Network audio	Dante, 4 × 4 channels · PRI / SEC RJ45 ports
Frequency response	20 Hz – 20 kHz (± 0.5 dB)
THD+N	–93 dB (0 dBu, 1 kHz, A-weighted)
Noise floor	–93 dBu (20 Hz – 20 kHz, A-weighted)
Signal-to-noise ratio	113 dB (+16 dBu, 1 kHz, A-weighted)
Control	USB type B (driver-free) · Ethernet TCP/IP (port 8234) · RS232 (DB9)
Indicators	Per-channel 8-segment meters with clip / limit, edit / mute LEDs · 20×2 backlit LCD
Power	AC 90–264 V, 50/60 Hz
Dimensions	483 × 215 × 44.5 mm (1U rack) · packed 537 × 343 × 77 mm
Weight	3.8 kg net · 4.2 kg packed
Operating temperature	–20 °C to 80 °C

3 • Front and rear panels

Front panel



1. **RBA480D** model name and rack ears.
2. **LCD** — device name, current preset, IP address and firmware.
3. **BACK / NEXT** — move through menus and values.
4. **MENU / ENTER** — open the menu, confirm.
5. **BYPASS / QUIT** — quick preset recall, leave a menu.
6. **FREQ / Q / GAIN** encoders — edit the selected parameter.
7. **Meters** — 8 segments per channel, –48 dBu to +12 dBu, with CLIP (inputs) and CLIP / LIMIT (outputs).
8. **EDIT / MUTE** LEDs and channel buttons for inputs A–D and outputs 1–8.
9. **USB** port for computer control.

Rear panel



1. **Power** — IEC inlet (AC 90–264 V) and power switch.
2. **RS232** — serial control from third-party systems.
3. **Network** — **PRI** (primary) and **SEC** (secondary) RJ45 ports for control and Dante audio.
4. **Outputs 1–8** — male XLR.
5. **Inputs A–D** — female XLR with latch; A and C also accept AES3.

Front-panel menu

Press **MENU**, use **NEXT** / **BACK** to choose a function, **ENTER** to open it and **QUIT** to leave.

Menu	Items	Notes
1 · Global Memory	Recall / Store / Delete a memory (preset)	
2 · Input Section	A–D: Analog or Dante	Dante units only
3 · Matrix	Routing, e.g. Out 1 = Input A	Long-press an output's channel button to change it
4 · System	1 IP set · 2 Rename · 3 DSP version	Use IP set to give the unit a network address

Press **BYPASS** for a shortcut to *Recall a Memory*: choose a preset with NEXT / BACK and press ENTER.

Channel buttons

- **Short press** a channel button to mute or unmute it — its LED turns **red** when muted.
- **Long press** to edit that channel from the front panel — the LED turns **blue**. Use the encoders to set the parameter shown on the LCD; BYPASS switches the selected function on or off.
- **Long press several channels** to edit them together; the LCD shows **IPX+** or **0PX+** . A short press then mutes the whole linked set (LEDs turn pink).

Inputs (long press)	Outputs (long press)
Gain, polarity, PEQ 1–15, HPF, LPF, delay, noise gate, Dynamic EQ 1–3, FIR bypass	Gain, polarity, PEQ 1–10, HPF, LPF, delay, compressor, limiter, FIR bypass

No effect after a change?

Check that the function isn't bypassed (BYPASS on the panel, or the function's on/off switch in software).

Device lock (password)

The unit can be locked with a 4-digit password (set from the Windows software, *Device* ▶ *Devices*). When locked, a lock icon shows on the LCD and channel mute buttons still work. To unlock from the panel, press any menu button, choose each digit with GAIN and its position with BACK / NEXT, then select OK and press ENTER.

Caution — keep the password safe.

After 5 wrong entries the unit cannot be unlocked and must be reset by Real Big Audio Labs, which clears all settings. Write the password down and store it with your system documentation.

4 • Connecting to a computer

The Mac and Windows software both connect over USB or the network. Only **one program** should control the unit at a time; close the other program before switching.

USB

Connect the front-panel USB port to the computer with a USB A-to-B cable. No driver is needed on either system. USB is the simplest way to start and is recommended for first setup.

Network (Ethernet)

1. Connect the **PRI** port to your network switch or router, or directly to the computer.
2. Give the unit an IP address from the front panel: **MENU** ▶ **System** ▶ **IP SET**. Use the same first three numbers as your computer (e.g. computer 192.168.1.20 → unit 192.168.1.50).
3. In the software, choose network connection and scan, or type the unit's IP address.

Direct cable (no router)

The unit sends its replies through its *gateway* address. On a direct cable, set the computer's IP address to the unit's gateway. Example: unit 192.168.2.2 with gateway 192.168.2.1 → set the computer to **192.168.2.1**, subnet 255.255.255.0.

Dante (RBA480D): the PRI port carries control and Dante; connect SEC to a second, separate network for redundant Dante. Configure Dante routing with Audinate's Dante Controller.

RS232

The rear DB9 port accepts control codes from third-party systems (Crestron, AMX, etc.) at 115200 bps. Each software's *Control codes* / *Central Control* page builds the exact command for any action.

Mac software

RBALabs DSP Control 1.1.1 · macOS 13 Ventura or later · Apple Silicon and Intel

A1 · Install

1. Download **RBALabs-DSP-Control** from realbigaudiolabs.com (a `.dmg` or `.zip`).
2. **DMG:** double-click it and drag **RBALabs DSP Control** onto the **Applications** folder. **ZIP:** double-click to unzip, then move the app to Applications.
3. Open it from Applications or Launchpad. The app is signed and notarized by Apple, so it opens without security warnings.
4. The first time it opens, read the **License Agreement** and click **Agree**. You can read it again any time under **Help ▶ License Agreement**.

Updating from RBALabs DSP Console480?

The app was renamed RBALabs DSP Control. Install the new app, then drag the old **RBALabs DSP Console480** from Applications to the Trash. Your settings carry over.

Local Network permission

The first time you connect over the network, macOS asks whether the app may find devices on your local network. Click **Allow**. If you clicked Don't Allow, turn it on in *System Settings ▶ Privacy & Security ▶ Local Network*.

A2 · Connect

The app looks for the unit as soon as it opens. Over **USB** it connects automatically. The bar at the top shows the connection: a green dot with the device name and firmware when connected.

For the **network**, click the connection menu at the top right and choose **Connect over network....** Type the unit's IP address, or click **Scan** to find units on your network. The app reconnects to the same unit next time. Choose **Use USB instead** to switch back.

When connected, the app reads every setting from the unit (a progress screen shows this; it takes a few seconds). No DSP? Click **Try the demo device** to explore every feature without hardware.

A3 · Mixer



The Mixer: inputs in blue, outputs in amber.

- **Fader** — drag to set the channel gain (–60 to +15 dB); double-click for 0 dB. Or type an exact value in the box below.
- **Meter** — console-style LED meter in **dBu**, –48 to +20: green below +6 dBu, amber +6 to +14, red above +14, with a clip light at the +20 dBu maximum and a 1.5 s peak hold. A –18 dBu test tone reads –18 on the meter.
- **MUTE** — mutes the channel (also shown in the sidebar).
- **Quick buttons** — Ø polarity · N noise gate (inputs) · E EQ (outputs) · D delay · F FIR · C compressor and L limiter (outputs). Lit = on.
- **Source button** (inputs) — shows the input's source (ANALOG, AES or DANTE; orange TEST when the test signal feeds it). Click it to open the input panel, below.
- **Grp** — put channels in a group (1–4). Joining copies the group's settings; afterwards every change is mirrored to all members.
- Double-click a channel name, or click the slider icon, to open its channel page. Right-click a channel name for Phase and Mute (and Source on inputs). The sidebar also lists every channel with a small level meter.



The input panel, opened from the source button under an input strip.

The **input panel** has everything for one input in one place: **Phase** (+ normal, – inverted), **Mute**, the **Source** – **ANALOG**, **AES** or **DANTE** (the active one is lit green) – and **Test signal**, with **Setting...** to open Sources & test signal (A6). Every input has its own source, so IN A, B, C and D can each use a different one.

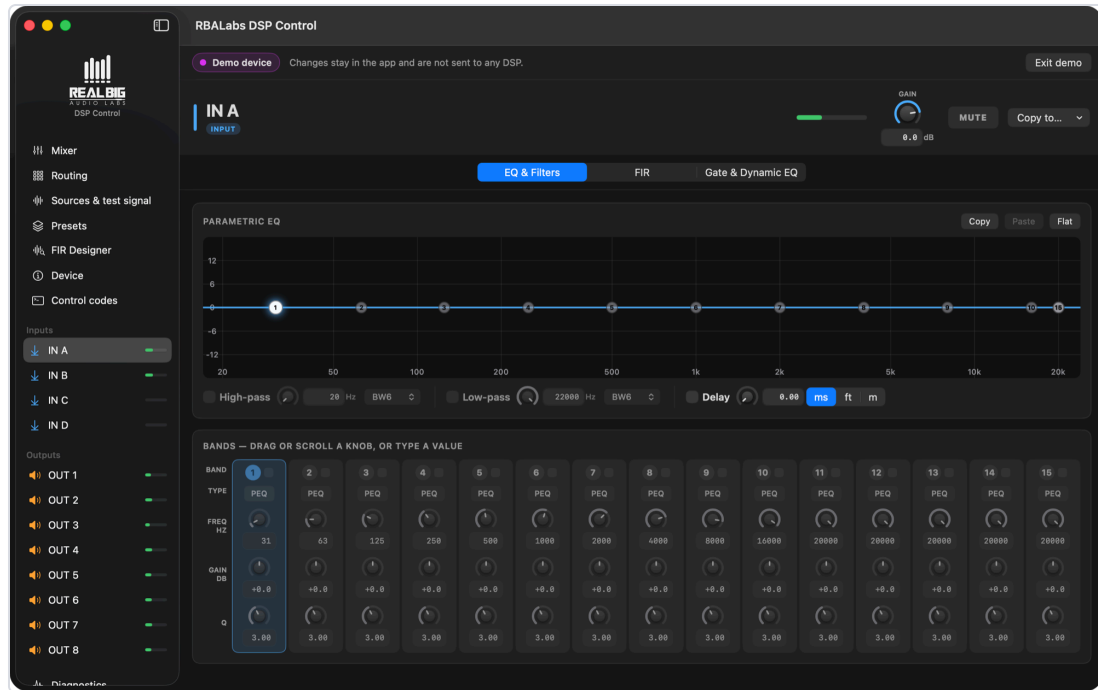
A4 • Channel pages

Each input and output has its own page with three tabs. The header shows the channel name, a level meter, a **Gain** knob, **MUTE** and **Copy to...** (copies all settings to another channel of the same kind).

Knobs and values

Every knob can be dragged up/down or scrolled (hold **⌘ Option** for fine steps), double-clicked to reset, or set exactly in the box underneath: click the box (the whole number is selected), type the new value and press **Return** or **Enter** – or just click somewhere else. What you type replaces the old value.

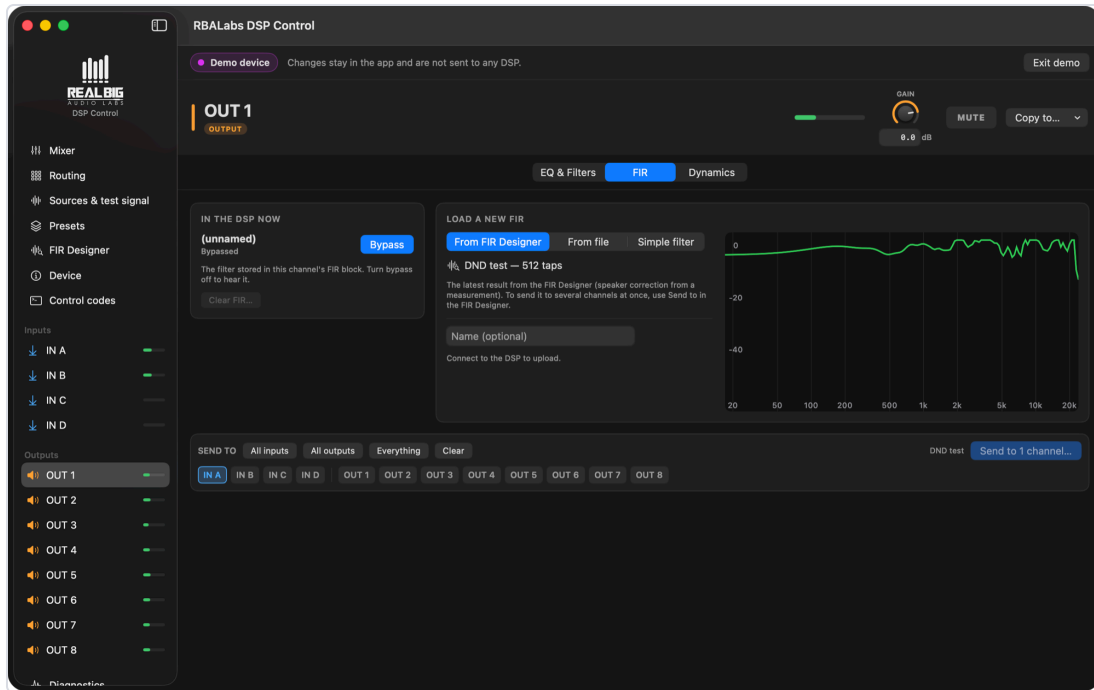
EQ & Filters



EQ & Filters on an input: the full-width graph (20 Hz – 20 kHz), high/low-pass and delay underneath, and all 15 bands.

- The **graph** spans the full width of the page for the best frequency resolution and runs from 20 Hz to 20 kHz. It shows the channel's combined response; drag a numbered dot to change that band's frequency and gain.
- **Filters & delay** sit in one row under the graph — high-pass and low-pass with frequency knob and slope (BW, BL, LR 6–48 dB/oct), and delay up to 2000 ms, shown in ms, feet or metres.
- The **band columns** show all bands at once (15 on inputs, 10 on outputs): on/off, type, and Freq / Gain / Q knobs. They fit the window at any size.
- **Copy / Paste** copy the whole EQ to another channel of the same kind; **Flat** resets all bands to 0 dB; **Bypass** (outputs) bypasses the EQ.

FIR



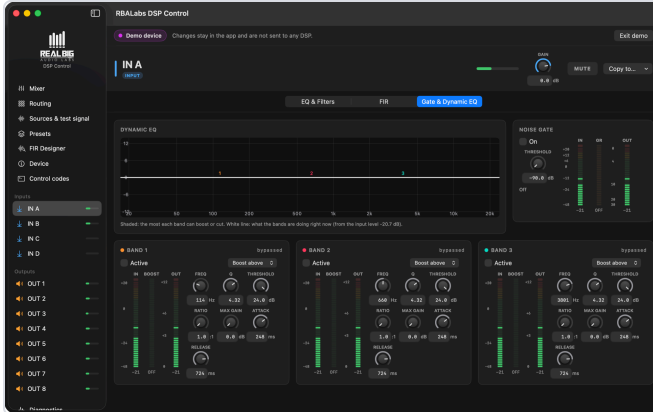
The FIR tab: what's in the unit now, and loading a new filter.

- In the **DSP now** shows the stored filter's name, taps and response, with **Bypass** and **Clear FIR...** (back to a flat pass-through).
- **Load a new FIR** from three sources: **From FIR Designer** (the latest design, see A8), **From file** (coefficient files from this app, rePhase, REW or Smaart: `.txt`, `.csv` or mono `.wav`, 48 kHz, up to 512 taps), or **Simple filter** (linear-phase high/low/band-pass).
- The **Send to** bar uploads the filter to any set of channels at once — use **All inputs**, **All outputs** or click individual channels.
- A new FIR stays bypassed until you turn bypass off (or click **F** on the mixer strip).

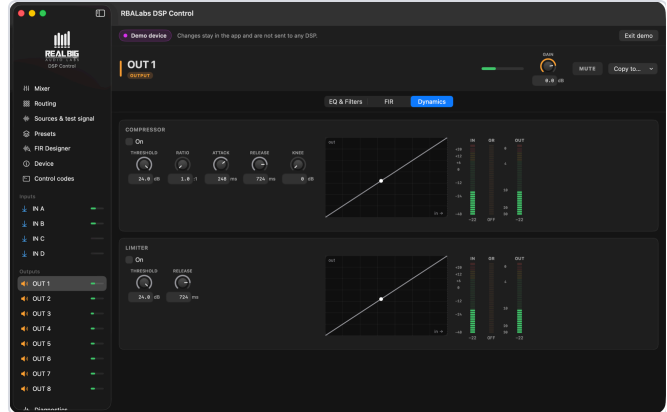
.KF files

from the Windows DSPconsole are encrypted and can't be opened on the Mac. Export the design as text from the FIR Designer instead.

Dynamics



Inputs: noise gate and 3-band Dynamic EQ.



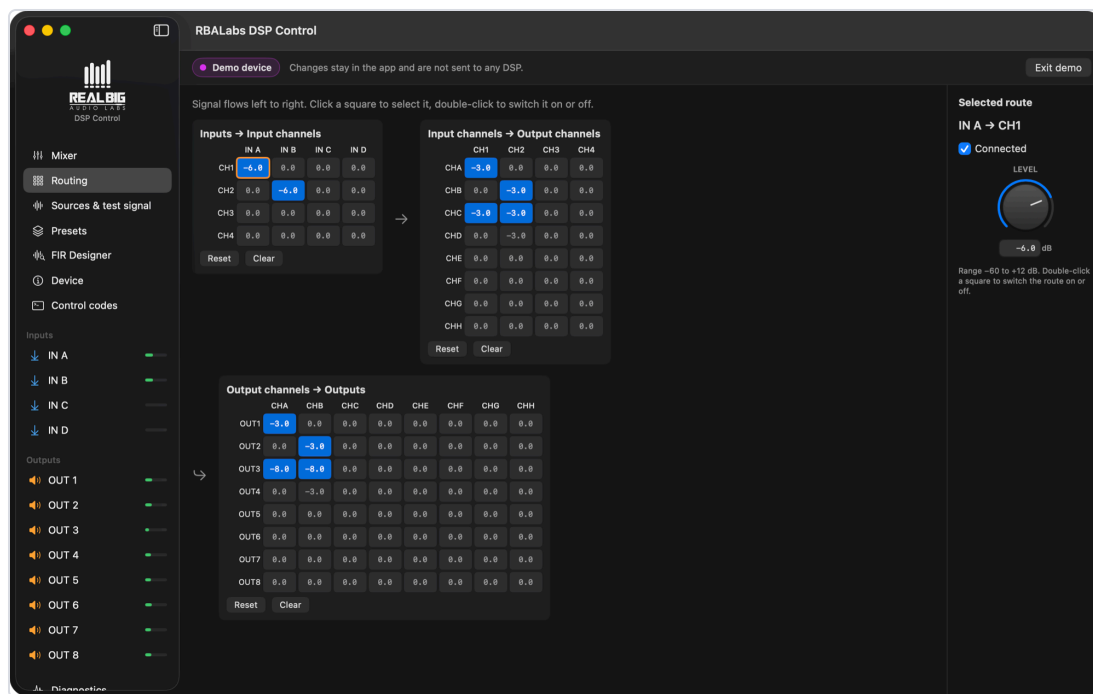
Outputs: compressor and limiter.

- Every dynamics block has **IN • GR • OUT** meters: input level (with the threshold marked), gain reduction falling from the top, and the resulting output. Boost modes of the Dynamic EQ show a green **BOOST** meter.
- **Compressor**: threshold, ratio, attack, release, knee, with a live transfer curve. **Limiter**: threshold and release.
- **Noise gate**: threshold; the gate closes when the signal falls below it.
- **Dynamic EQ** (inputs): 3 bands, each with mode (boost/cut above/below), frequency, Q, threshold, ratio, max gain, attack and release. The graph shows each band's range (shaded) and what it is doing right now (white line).

About the meters

Meters and thresholds share one scale in dBu. The unit reports one level per channel. GR and OUT are calculated from that level and your settings, so treat them as a close guide rather than an exact measurement.

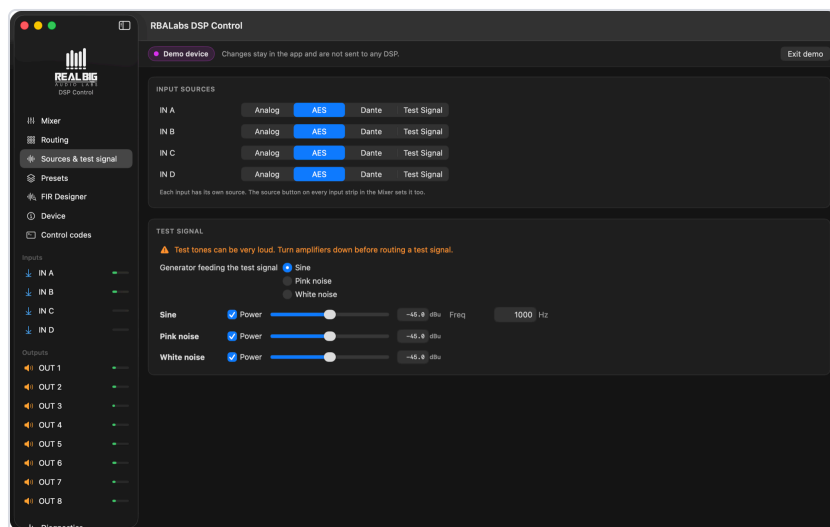
A5 · Routing



Three grids in signal-flow order, with the selected route's level on the right.

Signal flows left to right: **Inputs** → **Input channels** (4×4), **Input channels** → **Output channels** (8×4), **Output channels** → **Outputs** (8×8). Click a square to select it and set its level with the knob (−60 to +12 dB); **double-click** a square to connect or disconnect it (blue = connected). **Reset** restores one-to-one routing; **Clear** disconnects everything in that grid.

A6 · Sources & test signal

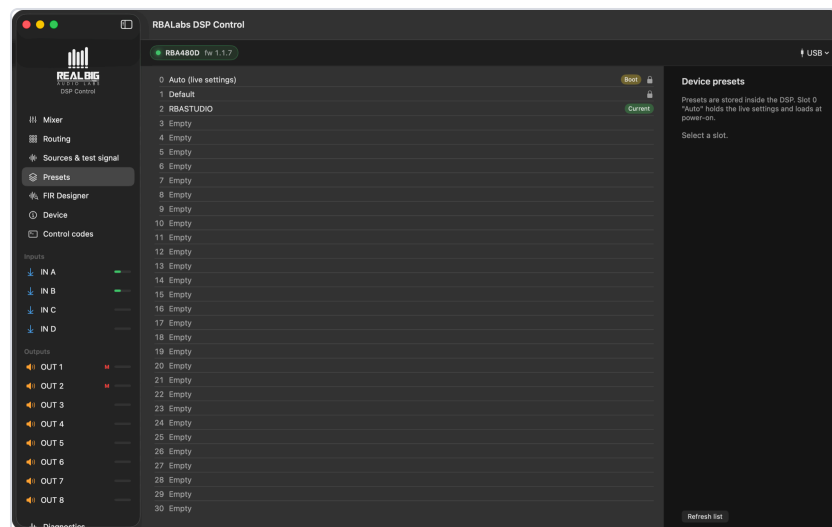


Choose each input's source (Analog, AES3, Dante or test signal) — every input is set on its own, also from the source button on its mixer strip — and set the generators: sine (with frequency), pink noise and white noise, each with level and power.

Turn amplifiers down first.

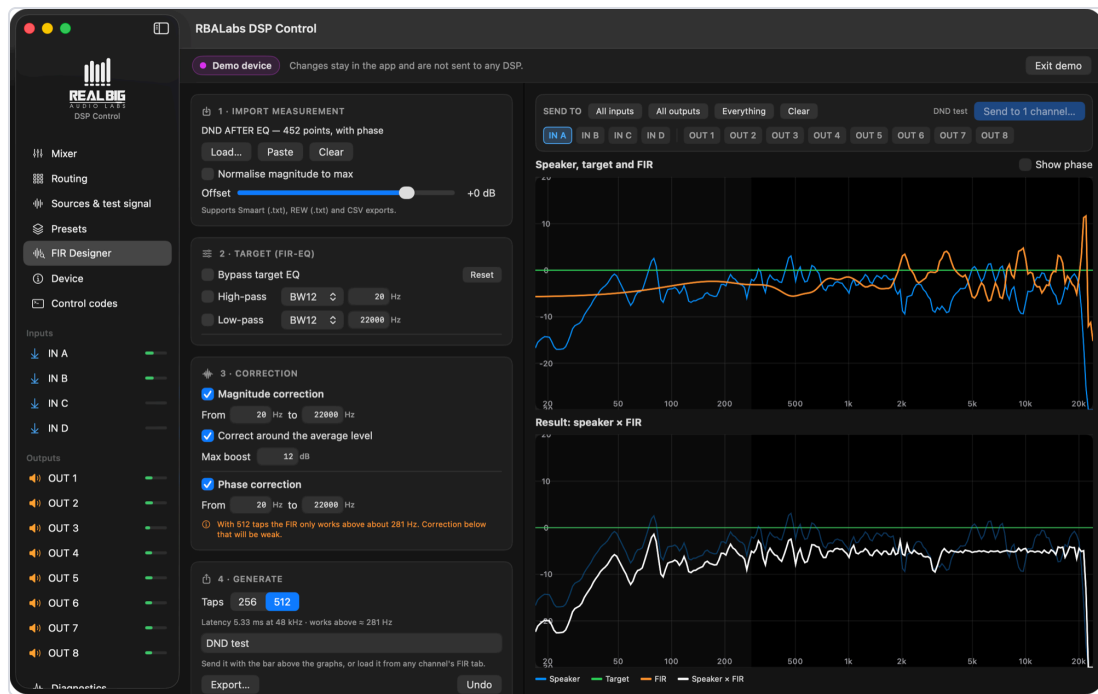
Test signals can be very loud and play through every output their inputs are routed to. The app asks for confirmation before routing one.

A7 • Presets



Presets are stored inside the unit. Slot 0 **Auto** holds the live settings and loads at power-on; slot 1 **Default** is the factory preset. Both are protected. Select slot 2–30 to **Save** the current settings with a name, **Recall** a stored preset (replaces all live settings) or **Delete** it.

A8 • FIR Designer



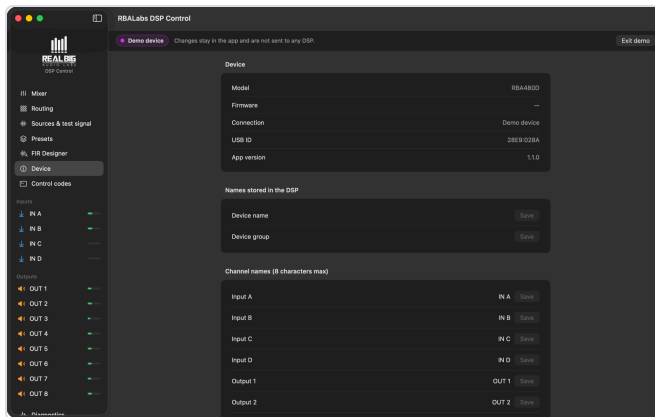
Speaker measurement (blue), target (green), FIR (orange) and the corrected result (white).

1. **Import measurement** — **Load...** a Smaart, REW or CSV export (frequency, magnitude, and phase if available), or **Paste** Smaart's “Copy as ASCII”. Optionally normalise to the maximum or apply an offset.
2. **Target (FIR-EQ)** — set the response you want: high-/low-pass crossover and up to 15 PEQ / shelf bands. Changing magnitude in the FIR doesn't change phase.
3. **Correction** — turn on **Magnitude correction** over a frequency range (around the average level, with a maximum boost), and **Phase correction** to make the speaker's phase linear.
4. **Generate** — choose 256 or 512 taps (512 is the RBA480D's maximum; latency and lowest useful frequency are shown), name the filter, then use **Send to** at the top to upload it to one or more channels. **Export...** saves the coefficients as a text file.

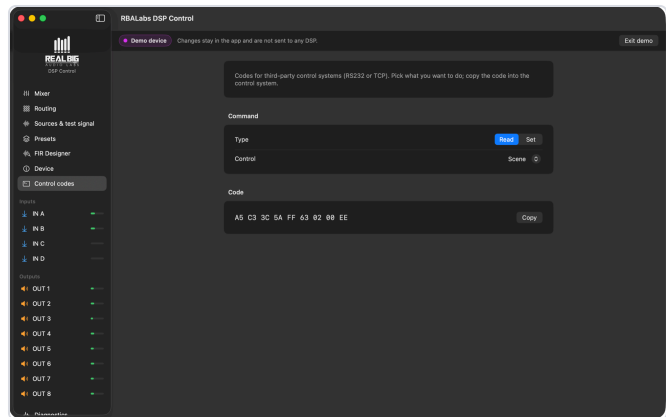
Taps and low frequencies

With 512 taps the FIR works above about 280 Hz; with 256 taps, above about 560 Hz. Use IIR EQ (A4) for corrections below that.

A9 · Device and control codes



Device: names and firmware.



Control codes for third-party systems.

Device shows the model, firmware and connection, and lets you rename the unit, set its group name and name each channel (up to 8 characters). **Control codes** builds the exact RS232 / TCP command for scene recall, mute, gain, matrix, input mode and step up/down — copy it into your control system.

A10 · Projects, demo and help

- **File ▶ Save Project...** ( **S**) saves every setting to a `.rbadsp` file on your Mac; **Open Project...** ( **O**) loads one back into the unit — useful for backups and for setting up several identical systems.
- **File ▶ Demo Device** explores the software without hardware; nothing is sent to any DSP.
- **Help** links to the website, opens a support email with your app and macOS versions filled in, and shows the License Agreement.
- **Genuine software only:** the app checks that it is an official, unmodified Real Big Audio Labs release. A modified or copied version will not open — download the app only from realbigaudiolabs.com.

A11 • Troubleshooting (Mac)

Problem	Solution
“Looking for the DSP” never connects (USB)	Try another cable or port; check the unit is powered. Quit the Windows software if it's running in a virtual machine on the same Mac.
Network: “Waiting for permission”	Allow Local Network access: System Settings ▶ Privacy & Security ▶ Local Network.
Network: can't reach the unit	Check both are on the same subnet. On a direct cable, set the Mac to the unit's gateway address (chapter 4).
FIR upload fails	Make sure no other program is talking to the unit, then try again. The app retries automatically.
A change has no effect	Check the function's on/off switch and, for FIR, that bypass is off.

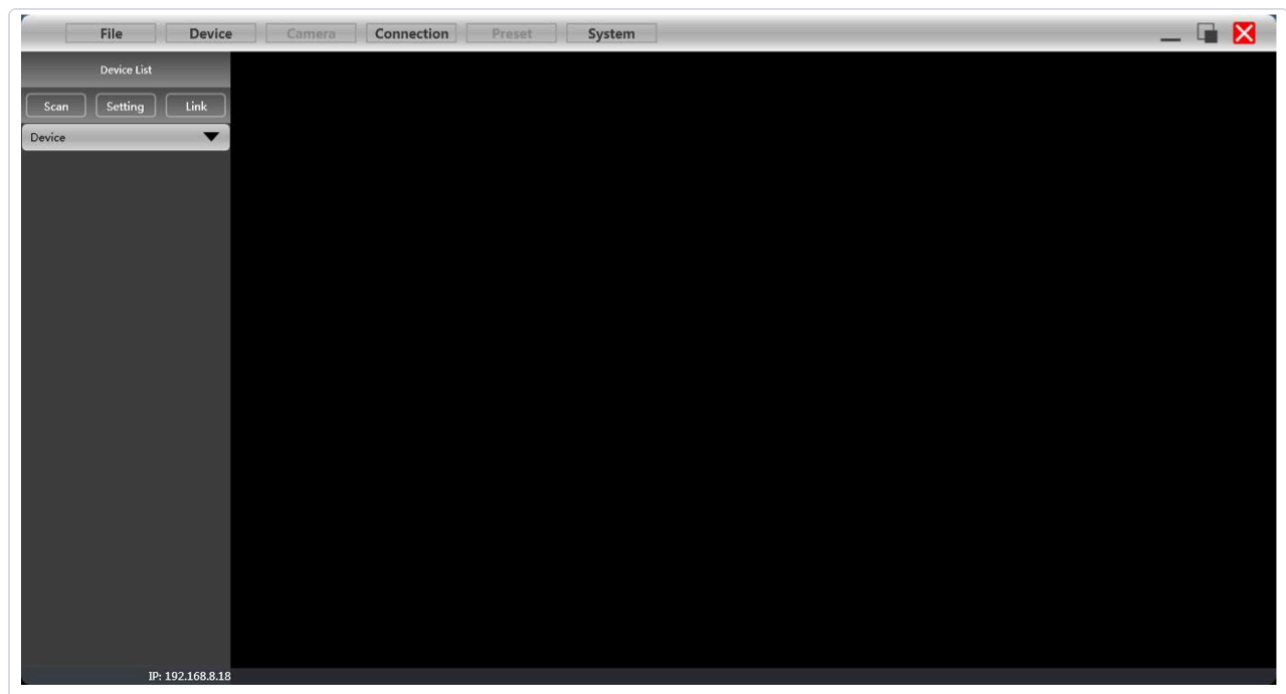
PART B

Windows software

DSPconsole · Windows 7 / 8 / 10 / 11 (x86 or x64) · Microsoft .NET Framework 4.0

B1 · Install

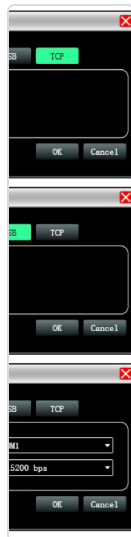
DSPconsole needs no installation. When the unit is connected over USB, it appears as a small storage disk containing the software; copy the `RB_DSPconsole` zip to your PC, unzip it, and double-click **DSPconsole.exe**. Microsoft .NET Framework 4.0 or later must be installed.



DSPconsole main window.

B2 · Connect

In the **Device List**, click **Setting** and choose the connection: **TCP** for the network, **USB** for a USB cable, or **COM** for RS232/RS485 (check the port and baud rate). DSPconsole scans using the last method chosen; connected units appear in the device list. Click a unit to load its controls.

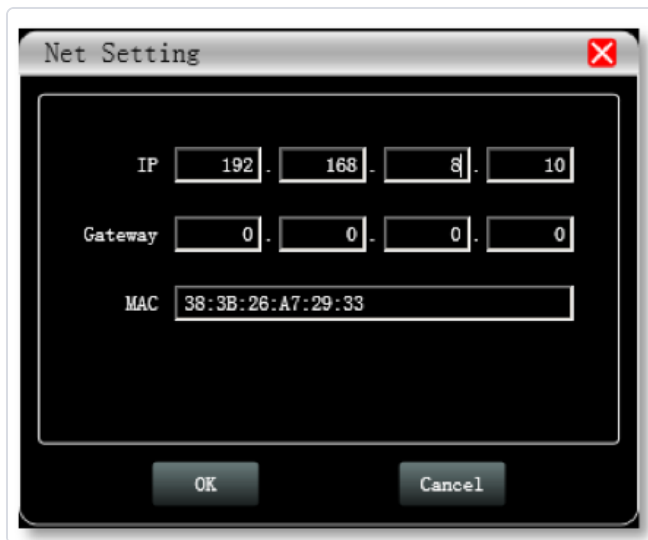


Connection: TCP, USB or COM.

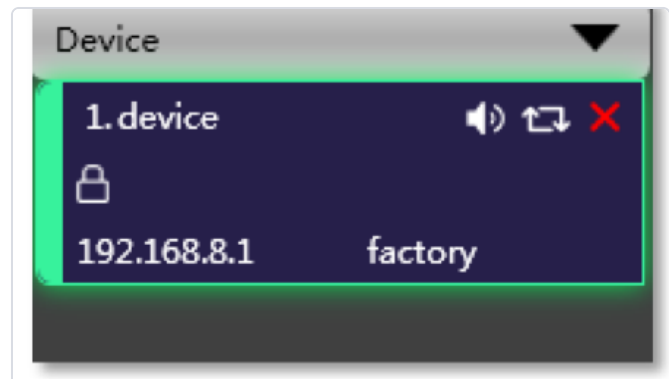


Device list with a connected unit.

Network shows a unit but won't connect? Its IP address is on a different subnet. Right-click the unit and choose **change IP**; in **Net Setting**, give it an address whose first three numbers match the PC's IP (shown at the bottom of the window).



Net Setting.



Connected over the network.

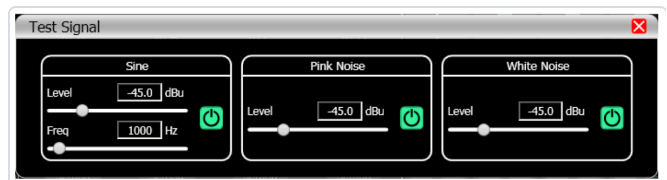
Link groups several identical units so they can be set together (group name, main device and link mode).

B3 • Function windows

Double-click the **HOME** icon to open all function windows, or double-click a single function icon. Drag windows to arrange them.

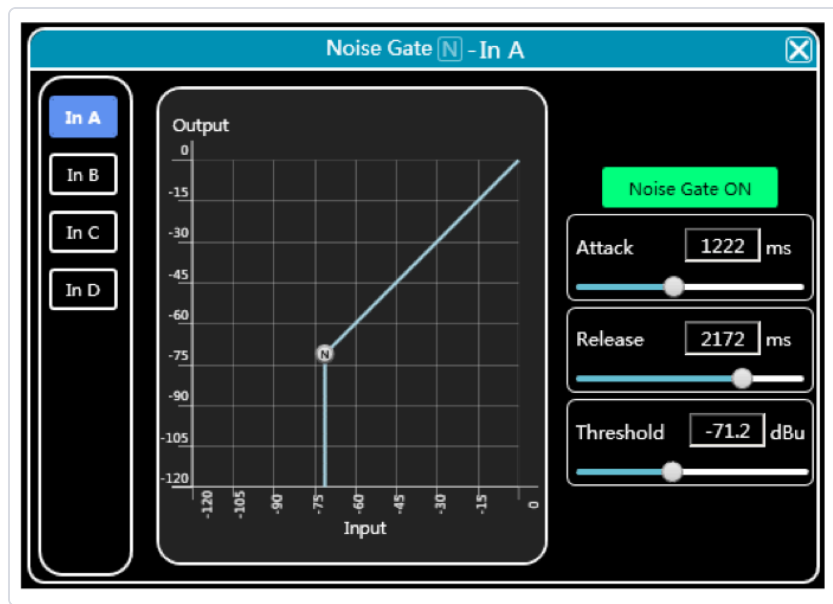


INPUT: phase, mute, source.



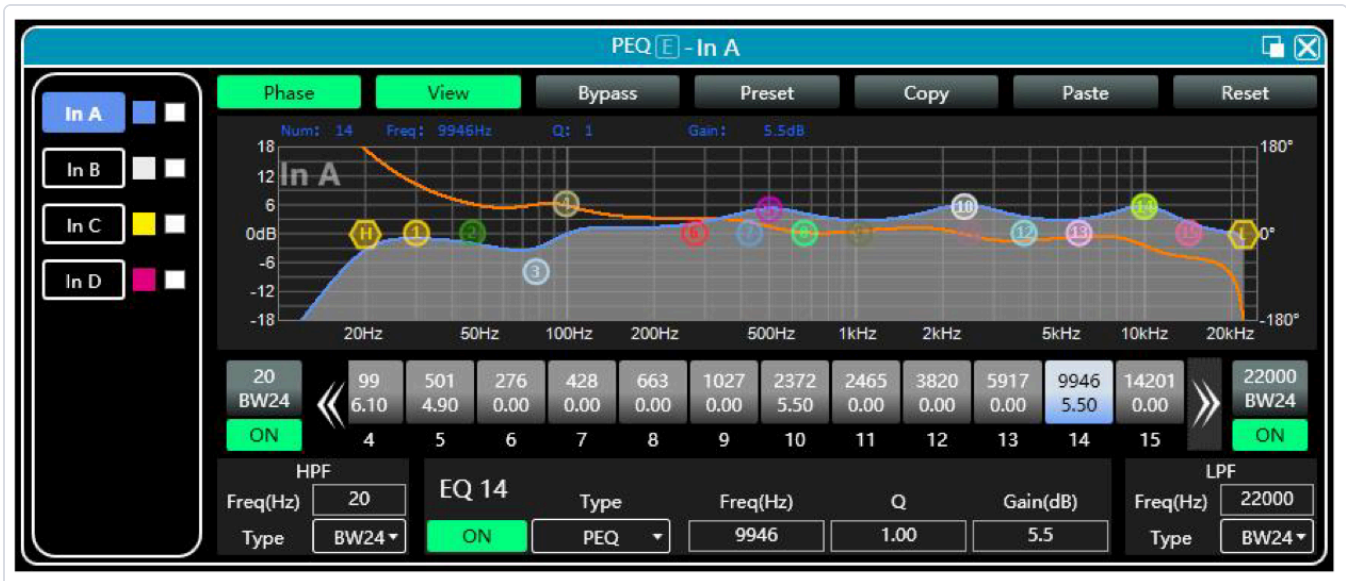
Test signal: sine, pink, white.

Noise gate (inputs)

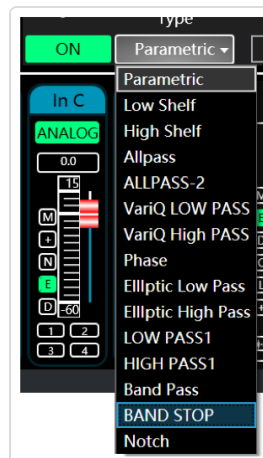


Attack and release 1–2895 ms; threshold –90 to 0 dBu. Click the on button to enable.

PEQ (inputs and outputs)

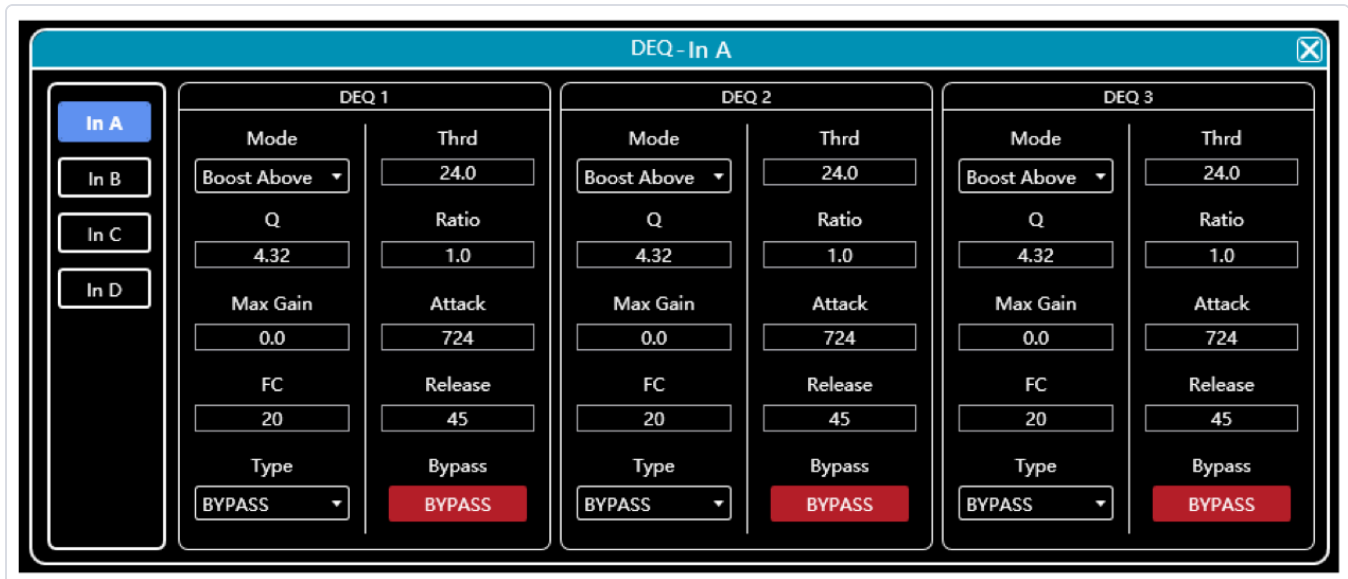


High- and low-pass filters with frequency and type (Butterworth 6–48, Bessel 12–48, Linkwitz–Riley 12–48). 15 bands on inputs, 10 on outputs; type the frequency, Q and gain, use the mouse wheel, or drag a dot on the curve. Buttons: **Phase curve**, **View** (show/hide points), **Bypass** (all EQ), **Preset** (save/load EQ to the PC), **Copy**, **Paste**, **Reset**. Channel buttons on the left switch channels; tick other channels to overlay their curves.



EQ filter types.

Dynamic EQ (inputs)

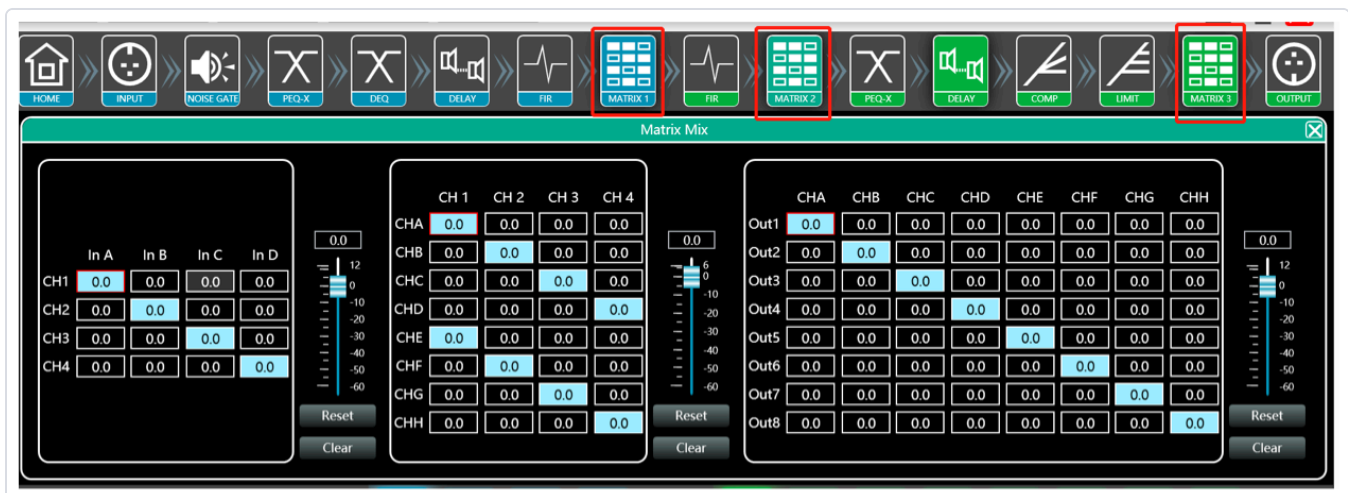


Mode Boost/Cut Above/Below · threshold -90 to +24 dBu · Q 0.27-15 · ratio 1-100 · max gain 0-12 dB · attack and release 1-2895 ms · frequency 20 Hz-22 kHz · type Bypass/PEQ.

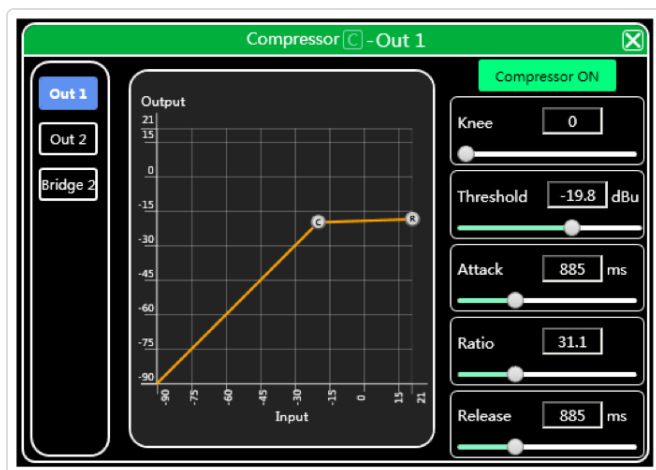
Delay

Up to 2000 ms on every input and output; click to enable, reset per channel, and switch units between ft, cm and ms.

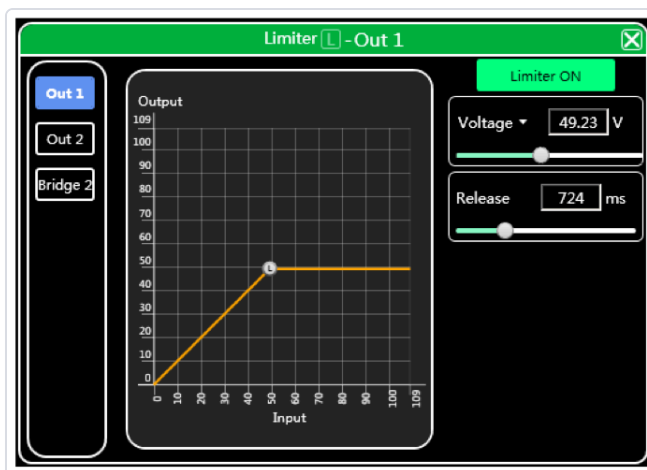
Matrix mix



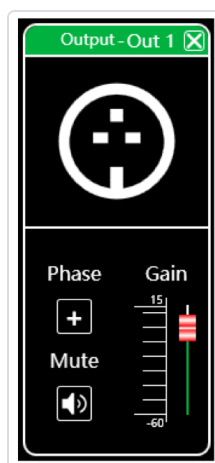
Inputs are along the top and outputs down the side. Double-click a value box to switch that crosspoint on (green). Select a box and use the gain slider or type a value to set its level. **Reset** restores one-to-one routing; **Clear** removes all routes.



Compressor: soft knee 0–30, threshold –90 to +24 dB, attack/release 1–2895 ms, ratio 1–100.

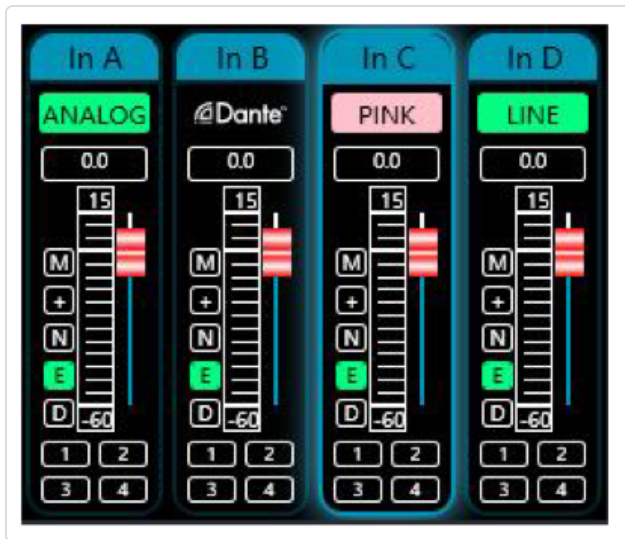


Limiter: threshold 0–24 dBu, release 1–2895 ms.

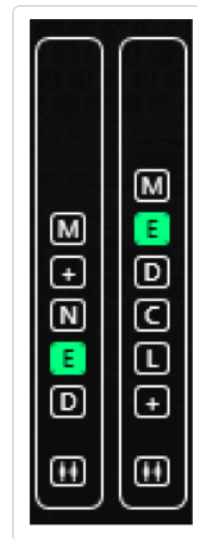


OUTPUT: phase, mute, gain.

B4 • Mixer and quick buttons



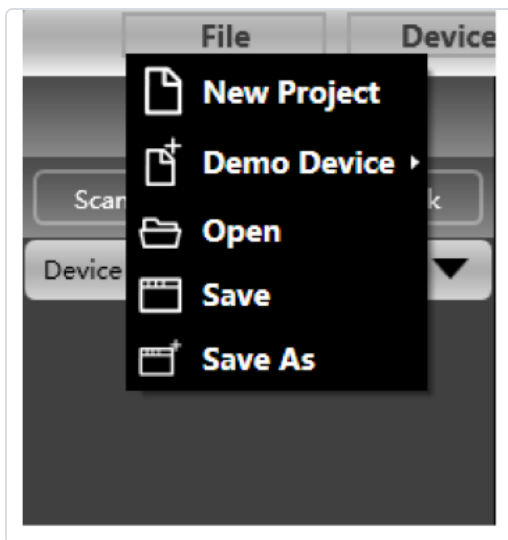
Input strips show the source (Analog, Dante, AES, test signal).



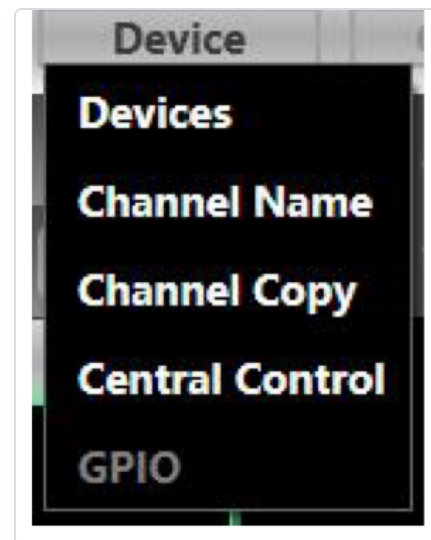
Quick buttons.

Set gain by typing, dragging the fader or with the mouse wheel. Quick buttons: **M** mute, **+** phase, **E** PEQ, **D** delay, **N** noise gate (inputs), **C** compressor and **L** limiter (outputs). The **link** button opens Channels Link to group channels so they share settings.

B5 • Menus



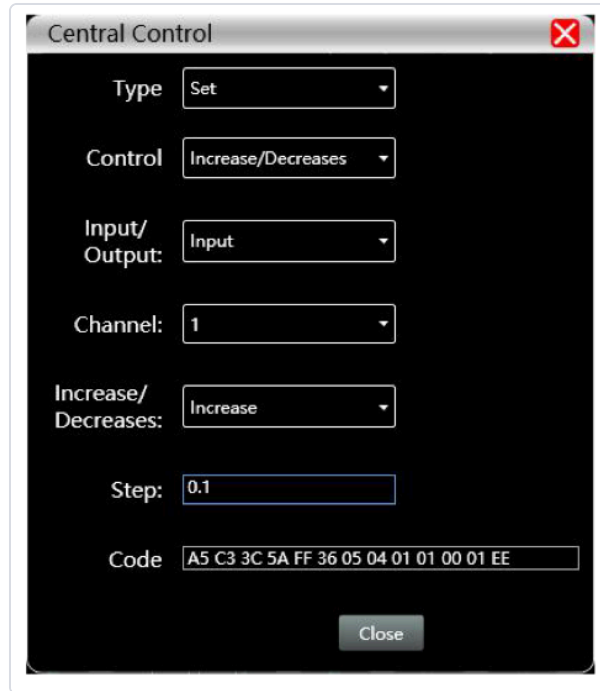
File menu.



Device menu.

- **File:** New project, Demo Device, Open, Save, Save As (project files on the PC).
- **Device ▶ Devices:** software and firmware versions, device name, IP address, and **device password** (see the caution in chapter 3).

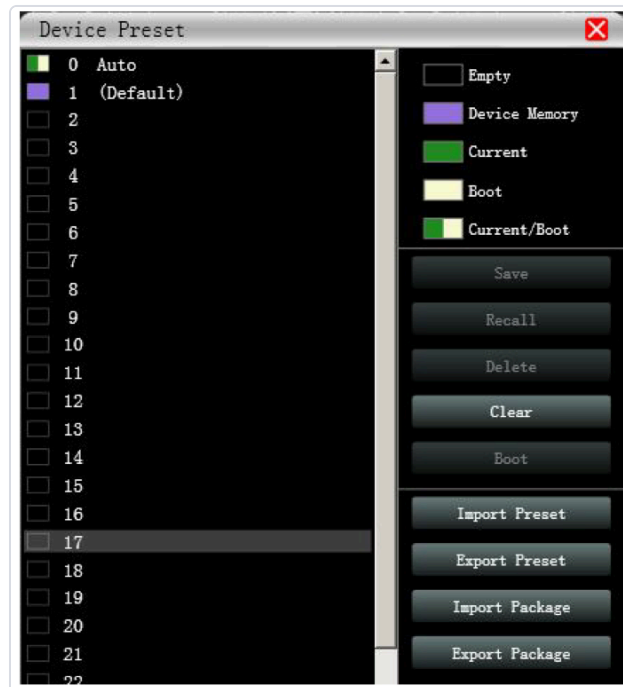
- **Device** ▶ **Channel Name / Channel Copy** (copy channels, even between identical units) / **Central Control** (builds third-party control codes).
- **Connection:** port and baud rate, connect / disconnect, connect all / disconnect all.
- **System:** language, About, firmware **Upgrade** (only with a .bin file from Real Big Audio Labs).



The Central Control dialog box is a window with a title bar and a close button. It contains several dropdown menus and a text field. The 'Type' dropdown is set to 'Set'. The 'Control' dropdown is set to 'Increase/Decreases'. The 'Input/Output' dropdown is set to 'Input'. The 'Channel' dropdown is set to '1'. The 'Increase/Decreases' dropdown is set to 'Increase'. The 'Step' text field contains '0.1'. The 'Code' text field contains the hexadecimal string 'A5 C3 3C 5A FF 36 05 04 01 01 00 01 EE'. A 'Close' button is at the bottom right.

Central Control builds the code for any command.

B6 · Presets

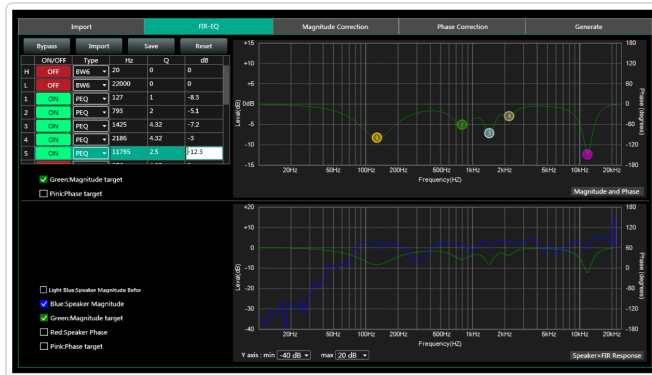


The Device Preset dialog box is a window with a title bar and a close button. It features a list of 23 presets on the left, with '0 Auto' and '1 (Default)' selected. On the right, there are checkboxes for 'Empty', 'Device Memory', 'Current', 'Boot', and 'Current/Boot'. Below these are buttons for 'Save', 'Recall', 'Delete', 'Clear', 'Boot', 'Import Preset', 'Export Preset', 'Import Package', and 'Export Package'.

Save stores the current settings in slots 2–30 · **Recall** loads one · **Delete** removes one (the default can't be deleted or overwritten) · **Clear** deletes all · **Boot** chooses the preset loaded at power-on (set *Auto* as boot to keep the last settings) · **Import / Export preset** and **preset package** move presets to and from the PC.

B7 · FIR Designer

Open it from the FIR window's **Designer** button or from **FIR DESIGNER** on the main screen.

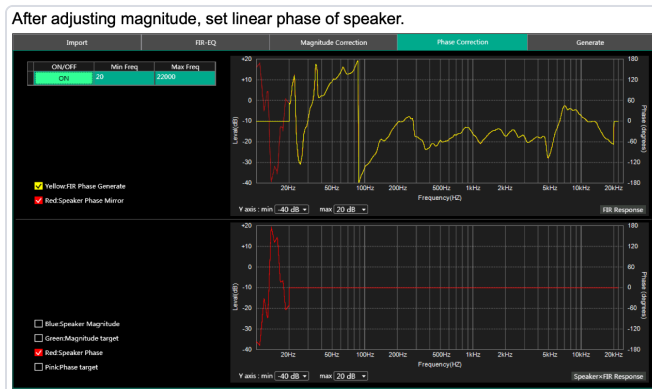


Import and FIR-EQ.

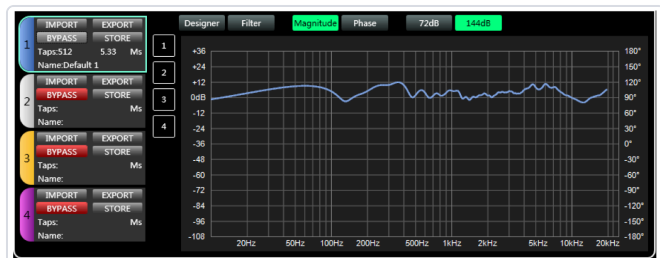
manually adjusting their magnitude. In this case, Magnitude Correction will be more useful. Just enable **ON** button for frequency.



Magnitude correction.



Phase correction.



Generate and store.

1. **Import** — Load a Smaart .txt export or **Import Clipboard**; **Clear**; normalise or offset the magnitude.
2. **FIR-EQ** — high/low-pass and 15 bands of PEQ / LSLV / HSLV to shape the target.
3. **Magnitude and Phase Correction** — turn on each and set its frequency range.
4. **Generate** — choose taps (e.g. 512), store to a FIR channel, optionally name it and export a .KF file.
Back in the FIR window, turn off BYPASS to hear it.

Appendix

FIR basics

EQ (IIR) filters change phase as well as level. An FIR filter can change level while keeping phase linear, or correct a speaker's phase. Its frequency resolution is $\text{sample rate} \div \text{taps}$, and it works down to about three times that. It adds a delay of $\text{taps} \div 2 \div \text{sample rate}$.

Taps at 48 kHz	Delay	Works above about
256	2.67 ms	563 Hz
512	5.33 ms	281 Hz

Typical uses: linearising a speaker's phase, matching different speaker models in one system, line-array coverage optimisation, and crossover alignment. You'll need a measurement microphone, an audio interface and measurement software (Smaart, REW, or the built-in FIR Designer).

Filter types and ranges

Type	Frequency	Q / gain	Use
Parametric (PEQ)	20 Hz – 22 kHz	Q 0.25–128 · ±15 dB	General correction
Low shelf / High shelf		Q 0.25–1.00 · ±15 dB	Tone shaping, instruments
Vari-Q / elliptic / 1st-order high- and low-pass, band-pass		Q 0.40–128	Crossovers, band limiting
All-pass 1 / All-pass 2 / Phase		Phase: Q = 0.25–179°	Phase alignment between speakers
Notch (band stop)		Q 0.25–128	Feedback and resonance control

Parameter ranges

Function	Range
Channel gain	–60 to +15 dB
High-/low-pass slopes	Butterworth 6/12/18/24/36/48 · Bessel 12/24/36/48 · Linkwitz-Riley 12/24/36/48
Delay	0–2000 ms
Noise gate	Threshold –90 to 0 dBu
Compressor	Threshold –90 to +24 dB · ratio 1–100 · attack/release 1–2895 ms · knee 0–30
Limiter	Threshold 0 to +24 dBu · release 1–2895 ms
Dynamic EQ	Threshold –90 to +24 dBu · Q 0.27–15 · ratio 1–100 · max gain 0–12 dB · attack/release 1–2895 ms
Matrix crosspoint	–60 to +12 dB
FIR	256 or 512 taps, 48 kHz
Presets	Slots 2–30 (0 = Auto/boot, 1 = Default)

Mac and Windows software compared

Feature	Mac	Windows
USB and network control	Yes	Yes (plus COM / RS485)
All DSP functions, routing, presets	Yes	Yes
FIR Designer	Yes (Smaart, REW, CSV)	Yes (Smaart)
FIR file formats	.txt, .csv, .wav	.KF
Send one FIR to many channels	Yes	One channel at a time
Project files	.rbadsp	DSPconsole project
Device password, firmware upgrade, preset import/export	—	Yes
Change the unit's IP address	Front panel	Software or front panel

Support

Real Big Audio Labs · Atlanta, Georgia, USA

Web: realbigaudiolabs.com · Email: info@realbigaudiolabs.com · Phone: +1 470.469.9568

© 2027 Real Big Audio Labs, LLC. All rights reserved. Specifications and features may change without notice. Dante is a trademark of Audinate. Smaart is a trademark of Rational Acoustics. Mac and macOS are trademarks of Apple Inc. Windows is a trademark of Microsoft Corporation.